PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference A3-072PCT	**FOR FURTHER ACTION**	See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)
International application No. PCT/US 03/31616	International filing date *(day/month/year)* 03.10.2003	Priority date *(day/month/year)* 03.10.2002
International Patent Classification (IPC) or both national classification and IPC H01R13/635		
Applicant MOLEX INCORPORATED		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.

2. This REPORT consists of a total of 5 sheets, including this cover sheet.

   ☒ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

   These annexes consist of a total of 2 sheets.

3. This report contains indications relating to the following items:

   - I ☒ Basis of the opinion
   - II ☐ Priority
   - III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
   - IV ☐ Lack of unity of invention
   - V ☒ Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
   - VI ☐ Certain documents cited
   - VII ☐ Certain defects in the international application
   - VIII ☐ Certain observations on the international application

Date of submission of the demand 07.04.2004	Date of completion of this report 08.11.2004
Name and mailing address of the international preliminary examining authority: European Patent Office - P.B. 5818 Patentlaan 2 NL-2280 HV Rijswijk - Pays Bas Tel. +31 70 340 - 2040 Tx: 31 651 epo nl Fax: +31 70 340 - 3016	Authorized Officer Salojärvi, K Telephone No. +31 70 340-4036

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No. PCT/US 03/31616

I. Basis of the report

1. With regard to the **elements** of the international application *(Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17))*:

Description, Pages

1-7 as originally filed

Claims, Numbers

1-6 as amended (together with any statement) under Art. 19 PCT

Drawings, Sheets

1/7-7/7 as originally filed

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

   These elements were available or furnished to this Authority in the following language: , which is:

   ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).

   ☐ the language of publication of the international application (under Rule 48.3(b)).

   ☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

   ☐ contained in the international application in written form.

   ☐ filed together with the international application in computer readable form.

   ☐ furnished subsequently to this Authority in written form.

   ☐ furnished subsequently to this Authority in computer readable form.

   ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.

   ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

   ☐ the description, pages:

   ☐ the claims, Nos.:

   ☐ the drawings, sheets:

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)).

   (Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)

6. Additional observations, if necessary:

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes:	Claims	1-6
	No:	Claims	
Inventive step (IS)	Yes:	Claims	1-6
	No:	Claims	
Industrial applicability (IA)	Yes:	Claims	1-6
	No:	Claims	

2. Citations and explanations

   see separate sheet

Re Item V

Reasoned statement with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1 Reference is made to the following document:

D1: US-A-6 129 562

2 NOVELTY

2.1 The document D1 is regarded as being the closest prior art to the subject-matter of claim 1, and shows (the references in parentheses applying to this document):

A memory card connector having an interior cavity (110) for receiving a memory card (6), comprising:

- an insulating housing (1) having a rear terminal-mounting section (11) at the rear of the cavity, and at least one longitudinal side wall section (13) extending forwardly from one end of the rear section at one side of the cavity, the longitudinal side wall section including a distal end (see Fig. 1), the housing having a bottom surface (121) for mounting on a circuit board (5), and the longitudinal side wall section having a top surface (13, see Fig. 1);
- a plurality of terminals (2) mounted on the rear terminal-mounting section (11) of the housing (1) and having contact portions for engaging contacts on the memory card;
- a metal shell (3) including a cover plate (see Fig. 1) overlying at least a portion of the longitudinal side wall section of the housing; and
- an engaging structure (33, 132, 331).

2.2 The subject-matter of claim 1 differs from this known memory card connector in that:

- the metal shell (3) covers substantially the entire area defined by the insulating housing
- the engaging structure (33, 132, 331) includes an engaging projection on the top surface of said side wall section of the housing extending into an engaging opening in the cover plate of the metal shell to prevent relative movement therebetween in a plane generally parallel to the cover plate and top surface, wherein there is clearance between the

enganging projection and the engaging opening to avoid creating residual stresses in the housing.

2.3 The subject-matter of claim 1 is therefore new (Article 33(2) PCT).

3 INVENTIVE STEP

3.1 The problem to be solved by the present invention may be regarded as providing an improved and yet simple structure to avoid creating residual stresses in the plastic material of the memory card connector housing.

3.2 The solution to this problem proposed in claim 1 of the present application is considered as involving an inventive step (Article 33(3) PCT) for the following reasons: There is no hint in the documents that are cited in the search report that there would be any clearance between the engaging parts, thereby making it possible to avoid stresses. D1 uses a separate metal supporting plate fastened to the arms of the connector body by a plug joint to protect the arms of the connector body against deformation.

3.3 Consequently, the subject-matter of claim 1 involves an inventive step (Article 33(3) PCT).

4 DEPENDENT CLAIMS

Claims 2-6 are dependent on claim 1 and as such also meet the requirements of the PCT with respect to novelty and inventive step.

5 INDUSTRIAL APPLICABILITY

The invention relates to a memory card connector. It is thus obvious that the invention has industrial applicability.

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CLAIMS

1. A memory card connector (26) having an interior cavity (34) for receiving a memory card (36), comprising:

an insulating housing (28) having a rear terminal-mounting section (40) at the rear of the cavity, and at least one longitudinal side wall section (44) extending forwardly from one end of the rear section at one side of the cavity, the longitudinal side wall section including a distal end (82), the housing having a bottom surface (52) for mounting on a circuit board, and the longitudinal side wall section having a top surface (54);

a plurality of terminals (32) mounted on the rear terminal-mounting section of the housing and having contact portions (32b) for engaging contacts on the memory card;

a metal shell (30) covering substantially the entire area defined by the insulating housing (28) and including a cover plate (70) overlying at least a portion of the longitudinal side wall section of the housing; and

an engaging structure (78) including an engaging projection (80) on the top surface (54) of said side wall section (44) of the housing extending into an engaging opening (84) in the cover plate (70) of the metal shell (30) to prevent relative movement therebetween in a plane generally parallel to the cover plate and top surface, wherein there being clearance between the engaging projection and the engaging opening to avoid creating residual stresses in the housing.

2. The memory card connector of claim 1 wherein said insulating housing (28) is generally L-shaped with said terminal-mounting section (40) extending transversely across the rear of the cavity (34), said engaging projection (80) being near the distal end (82) of the side wall section (44) and projecting from the top surface (54) thereof for engagement in an engaging opening (84) in the cover plate (70) of the metal shell.

3. The memory card connector of claim 1 wherein said insulating housing (28) is generally U-shaped with said terminal-mounting section (40) extending transversely across the rear of the cavity (34) and including two of said longitudinal side wall sections (42,44) extending forwardly from both opposite ends of the rear section, and including one of said engaging projections (80) near a distal end (82) of each side wall section and projecting from the top surface (54) thereof into a respective engaging opening (84) in the cover plate (70) of the metal shell.

4. The memory card connector of claim 1, including a metal securing nail (92) fixed to the insulating housing (28) and having a foot portion (92a) for securing to an appropriate mounting pad on the circuit board.

5. The memory card connector of claim 4 wherein said metal securing nail (92) is fixed to the housing adjacent said engaging structure (78).

6. The memory card connector of claim 5 wherein said metal shell (30) includes a grounding tab (94) formed into engagement with said metal securing nail (92) to provide a ground potential.